The Environmental Literacy and Inquiry (ELI) Professional Development Model: Enhancing the Teaching and Learning of Energy with Technology-integrated Professional Development

Tamara E. Peffer and Alec M. Bodzin, Lehigh University

Email: tep205@lehigh.edu

Collaboration and Partnership

✧Design partnership model includes:
- ✦Science teacher educators
- ✦Classroom teachers
- ✦Scientists
- ✦GIS specialists
- ✦Instructional designers
- ✦School administrators

✧Incorporates iterative feedback
✧Identify needs for differentiation
✧Review technology tool and support needs

Beliefs

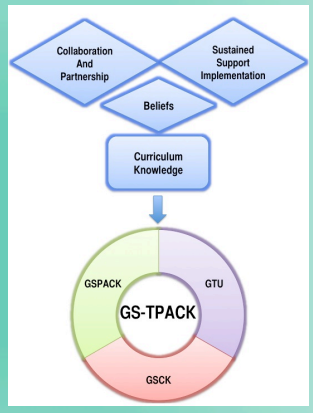
✧Address beliefs and misconceptions about science content, technology, and systemic issues
✧Many preservice and inservice teacher share implementation concerns
- ✦Self efficacy in teaching with geospatial tools
- ✦School support
- ✦Technology failure

The ELI PD model blends the interdisciplinary pedagogical approaches of environmental education with technology integration to enhance the pedagogical content knowledge of inservice science teachers and provide them the requisite skills needed to effectively teach complex environmental issues such as energy use.

GS-TPACK – Geospatial Science Technological Pedagogical Content Knowledge
is a way of thinking about how teachers integrate their knowledge of geospatial technology and teaching across science disciplines.

Initial PD Implementation and Results

✧Five - 8th grade teachers
✧Teachers 1-3 participated in a 3 day, 12 hour workshop
✧Teachers 4 &5 participated in an alternate 1 day workshop
✧All sessions utilized personal learning context and educative curriculum materials
✧Examined changes in skill and attitude with GS-TPACK instrument



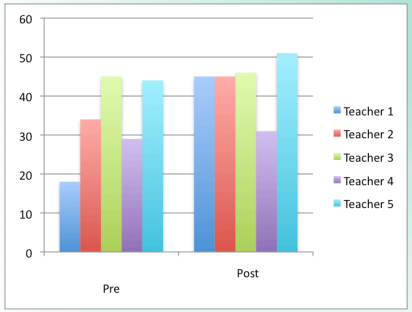
Sustained Support Implementation

✧Professional Development sessions include model student experiences and learning context
✧Ideal 3-day, 12 hour workshop introduces content and technology requisites
✧Alternate 1 day, 6 hour workshop offered
✧Bi-weekly review of upcoming lessons and technology support
✧Sessions encourage reflection
✧Educative curriculum materials for teacher content knowledge and pedagogical supports

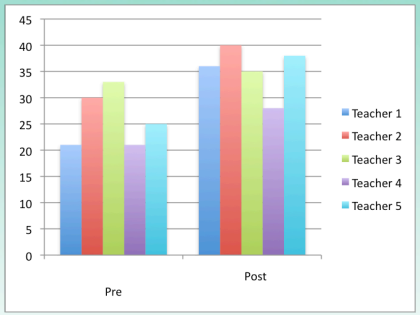
Curriculum Knowledge

✧Aligns to ELI Energy Unit
✧Addresses personal and student misconceptions
✧Addresses learning with geospatial technologies

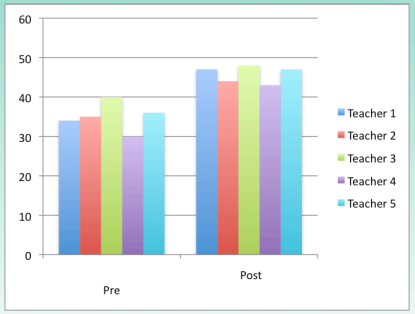
Geospatial Science Pedagogical Content Knowledge (GSPACK)



Geospatial Science Content Knowledge (GSCK)



Geospatial Technology Use (GTU)



GS-TPACK Total